

Lab 1 - VLANs on a 2950 Switch

Lab 1: VLANs on an IOS (2950) switch

The physical topology is as shown in Figure 13-1.

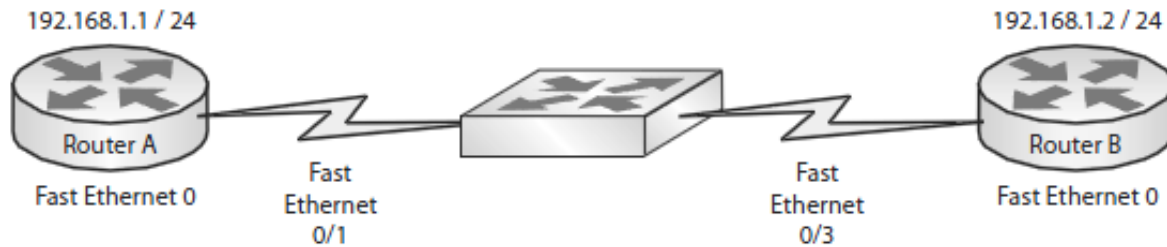


Figure 13-1: IOS VLANs

Lab exercise

Your task is to configure the network in Figure Figure 13-1. All the router interfaces on the switch and router are in VLAN 2. If you use 2500 series routers, you will need to attach a transceiver to the AUI interface in order to attach the Ethernet cable. If you do not wish to use routers, you can use PCs and configure the IP address on the Ethernet card instead. Any switch running IOS will do for this lab.

Purpose

Creating VLANs on an IOS switch is one of the core competencies of a Cisco engineer. Make sure you are very familiar with doing this.

Lab objectives

1. Configure the switch to use VLAN 2 name "Cisco".
2. Place two interfaces on the switch in VLAN 2.
3. Configure the routers' interfaces.
4. Ping across the LAN on VLAN 2.

Lab walk-through

1. To configure the IP address on the routers do the following:

```
Router>enable
```

```
Router#
```

```
Router#configure terminal
```

```
Router(config)#hostname RouterA
```

```
RouterA(config)#interface fast ethernet 0
```

```
RouterA(config)#ip address 192.168.1.1 255.255.255.0
```

```
RouterA(config-if)#no shut
```

```
RouterA(config-if)# ^ Z
```

```
RouterA#
```

Router B:

```
Router>enable
```

```
Router#config t
```

```
Router#hostname RouterB
```

```
RouterB(config)#interface fast ethernet 0
```

```
RouterB(config)#ip address 192.168.1.2 255.255.255.0
```

```
RouterB(config-if)#no shut
```

```
RouterB(config-if)# ^ Z
```

```
RouterB#
```

If you have plugged directly into the switch, you will be able to ping from router to router or switch to switch. This is because the switch will use VLAN 1 by default.

```
RouterA#ping 192.168.1.2
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms

```
RouterA#
```

2. To configure both the routers to connect to VLAN 2 on the switch, enter the following commands:

```
Switch#config t
```

```
Switch(config)#vlan 2 « Create VLAN 2
```

```
Switch(config-vlan)#name Cisco
```

```
Switch(config-vlan)# ^ z
```

```
Switch#
```

3. To configure the interfaces on the switch to use VLAN 2, use the following commands.

```
Switch#config t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Switch(config)#interface fastethernet 0/1
```

```
Switch(config-if)#
```

```
Switch(config-if)#description ToRouterA « Set the description.
```

```
Switch(config-if)#switchport mode access « On, by default
```

```
Switch(config-if)#switchport access vlan 2 « Add to VLAN 2.
```

```
Switch(config-if)# ^Z
```

4. We can try to ping from router B to router A now. Since we have only put one interface into VLAN 2 (router A), the second (router B) remains in VLAN 1 (by default).

```
RouterB#ping 192.168.1.1
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:

.....

Success rate is 0 percent (0/5)

5. We now put the Ethernet interface connecting to router B into VLAN 2.

```
Switch#config t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Switch(config)#interface fastethernet 0/3
```

```
Switch(config-if)#description ToRouterB
```

```
Switch(config-if)#switchport mode access « You can omit this.
```

```
Switch(config-if)#switchport access vlan 2
```

```
Switch(config-if)# ^Z
```

6. We can now ping across the LAN from router A to router B. The first one or two pings will fail until the switch has built up a database of which MAC addresses are connected to which ports.

```
RouterA#ping 192.168.1.2
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:

.....

Success rate is 0 percent (0/5)

```
RouterA#ping 192.168.1.2
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 4/4/4 ms

```
RouterA#ping 192.168.1.2
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms

```
RouterA#
```

7. Reload the switch.

```
Switch#erase ?
```

flash: Filesystem to be erased

nvrn: Filesystem to be erased

startup-config Erase contents of configuration memory

```
Switch#erase start
```

Erasing the nvrn filesystem will remove all files! Continue?

[confirm]

[OK]

Erase of nvrn: complete

```
Switch#reload
```

System configuration has been modified. Save? [yes/no]: n

Proceed with reload? [confirm]

Show runs

RouterA#

RouterA#show run

Building configuration...

Current configuration : 428 bytes

!

version 12.1

no service single-slot-reload-enable

service timestamps debug uptime

service timestamps log uptime

no service password-encryption

!

hostname RouterA

!

ip subnet-zero

!

interface fastethernet 0

ip address 192.168.1.1 255.255.255.0

!

interface Serial0

no ip address

shutdown

!

interface Serial1

no ip address

shutdown

!

ip classless

no ip http server

!

line con 0

line aux 0

```
line vty 0 4
```

```
!
```

```
end
```

```
- - -
```

```
RouterB#show run
```

```
Building configuration...
```

```
Current configuration : 428 bytes
```

```
!
```

```
version 12.1
```

```
no service single-slot-reload-enable
```

```
service timestamps debug uptime
```

```
service timestamps log uptime
```

```
no service password-encryption
```

```
!
```

```
hostname RouterB
```

```
!
```

```
ip subnet-zero
```

```
!
```

```
interface fastethernet 0
```

```
ip address 192.168.1.2 255.255.255.0
```

```
!
```

```
interface Serial0
```

```
no ip address
```

```
shutdown
```

```
!
```

```
interface Serial1
```

```
no ip address
```

```
shutdown
```

```
!
```

```
ip classless
```

```
no ip http server
```

```
!
```

```
line con 0
line aux 0
line vty 0 4
!
end
```

```
RouterB#
```

```
- - -
```

```
Switch
```

```
Switch#
```

```
Switch#show run
```

```
Building configuration...
```

```
Current configuration:
```

```
!
version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Switch
!
ip subnet-zero
!
interface FastEthernet0/1
 description ToRouterA
 switchport access vlan 2
!
interface FastEthernet0/2
!
interface FastEthernet0/3
```

```
description ToRouterB
switchport access vlan 2
!
interface FastEthernet0/4
!
!interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface VLAN1
no ip directed-broadcast
no ip route-cache
!
!
line con 0
transport input none
stopbits 1
line vty 5 15
!
end
```

